



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/751,194	12/28/2000	Jim Cathey	40029/JEJ/X2	8533
35114	7590	08/09/2005	EXAMINER	
ALCATEL INTERNETWORKING, INC. ALCATEL-INTELLECTUAL PROPERTY DEPARTMENT 3400 W. PLANO PARKWAY, MS LEGL2 PLANO, TX 75075			PHAN, TRI H	
			ART UNIT	PAPER NUMBER
			2661	

DATE MAILED: 08/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/751,194

Applicant(s)

CATHEY ET AL.

Examiner

Tri H. Phan

Art Unit

2661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-57 is/are pending in the application.
- 4a) Of the above claim(s) 31-43 and 46-57 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-22, 24-30, 44 and 45 is/are rejected.
- 7) ☐ Claim(s) 10 and 23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6/18/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment/Arguments

1. This Office Action is in response to the Response to Election/Restriction filed on July 14th, 2004. Claims 1-30, 44 and 45 are pending in the application. Per Election dated 7/14/2004, Applicant elected claims 1-30, 44 and 45 for prosecution on the merits. Thus, claims 31-43 and 46-57 are withdraw from further consideration as being directed to a non-elected invention for the below reasons. In a response to this Office Action, Applicants should cancel the non-elected claims 31-43 and 46-57 to expedite the prosecution, should the response place the application in a favorable condition for allowance.

Election/Restrictions

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:
- I. Claims 1 – 30, 44 and 45, drawn to system and method of processing for generic control systems or specific applications, classified in class 700, subclass 1.
 - II. Claims 31, 33, 46 and 48, drawn to system and method of using particular technique on spanning tree, classified in class 370, subclass 256.
 - III. Claims 32, 34, 47 and 49, drawn to system and method for processing of address header for routing, classified in class 370, subclass 392.
 - IV. Claims 35-39, 40-43, 50-53 and 54-57, drawn to system and method for determination of communication parameters, classified in class 370, subclass 252.

3. The inventions are distinct, each from other because of the following reason:

Inventions I and II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombinations has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the inventions I and II have separate utilities such as invention I teaches methods for processing for generic control systems or specific applications such as identifying, generating and executing programmable elements for specific application data; and invention II teaches methods for using particular technique such as classifying, executing the decision tree, performing header checks and traversing on spanning tree classification.

Inventions I and III are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombinations has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the inventions I and III have separate utilities such as invention I teaches methods of processing for generic control systems or specific applications such as identifying, generating and executing programmable elements for specific application data; and invention III teaches methods for extracting packet header, storing extracted data in the header data cache, retrieving extracted data from the header data cache and generating the header data cache index for determining classification for packets.

Inventions I and IV are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require

Art Unit: 2661

the particulars of the subcombination as claimed for patentability, and (2) that the subcombinations has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the inventions I and IV have separate utilities such as invention I teaches methods of processing for generic control systems or specific applications such as identifying, generating and executing programmable elements for specific application data; and invention IV teaches methods for receiving inputs including disposition recommendations for the packets, generating the disposition decision, and transmitting to the outputs.

Inventions II and III are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention II teaches methods for using particular technique such as classifying, executing the decision tree, performing header checks and traversing on spanning tree classification; and invention III teaches methods for extracting packet header, storing extracted data in the header data cache, retrieving extracted data from the header data cache and generating the header data cache index for determining classification for packets. See MPEP § 806.05(d).

Inventions II and IV are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention II teaches methods for using particular technique such as classifying, executing the decision tree, performing header checks and traversing on spanning tree classification; and invention IV teaches methods for receiving inputs including disposition recommendations for the packets, generating the disposition decision, and transmitting to the outputs. See MPEP § 806.05(d).

Inventions III and IV are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention III teaches methods for extracting packet header, storing extracted data in the header data cache, retrieving extracted data from the header data cache and generating the header data cache index for determining classification for packets; and invention IV teaches methods for receiving inputs including disposition recommendations for the packets, generating the disposition decision, and transmitting to the outputs. See MPEP § 806.05(d).

4. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, which require different searches, restriction for examination purposes as indicated is proper.

5. Since Applicants have received actions on the merits for the originally presented invention, this action has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 31-43 and 46-57 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 2661

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

7. Claims 1-2, 5-7, 14-15, 18-20, 27-28, 30 and 44-45 are rejected under 35 U.S.C. 102(e) as being anticipated by **Salim, Jamal Hadi** (U.S.6,628,653; hereinafter refer as '**Salim**').

- In regard to claims 1, 14 and 27, **Salim** discloses in Figs. 2-14 and in the respective portions of the specification about the *method and packet switching controller* ('packet processing apparatus'; For example see Figs. 2, 12-14), *which comprises the first engine* ('programmable discriminator'; see Figs. 2, 4; col. 4, lines 13-31, 45-47) *and the second engine* ('programmable table search/maintenance logic and interpreting logic'; see Figs. 2, 5-6) *comprises programmable elements* (For example see col. 7, line 64 through col. 8, line 8; col. 10, line 48 through col. 11, line 7) *containing one or more instruction sets* ('selected bits or mask'; For example see col. 8, line 63 through col. 9, line 28; wherein the selected bits are used to select the appropriate function as disclosed in col. 10, line 63 through col. 11, line 7; or instruction as disclosed in col. 7, lines 1-2), *wherein the first engine identifies the instruction set* ('selected bits or mask'; col. 6, lines 55-56) *to be executed in the programmable element for the packet* (For example see Fig. 4; col. 8, line 63 through col. 9, line 28), *and the programmable element executes the identified instruction set to process the packet* (For example see col. 6, line 56 through col. 7, line 2).

- Regarding claims 2, 15 and 28, in addition to features in base claims 1, 14 and 27 (see rationales pertaining the rejection of base claims 1, 14 and 27 discussed above), **Salim** further

Art Unit: 2661

discloses about the *plurality of identified instruction sets are executed sequentially to process the packet* (For example see Fig. 7; col. 11, lines 51-54).

- In regard to claims 5-6 and 18-19, in addition to features in base claims 1, 14 and 27 (see rationales pertaining the rejection of base claims 1, 14 and 27 discussed above), **Salim** further discloses about the *programmable element generating application data for the packet by using destination address of the packet and wherein the application data includes routing data* (For example see col. 15, line 57 through col. 16, line 11).

- Regarding claim 7, 20 and 30, in addition to features in base claims 1, 14 and 27 (see rationales pertaining the rejection of base claims 1, 14 and 27 discussed above), **Salim** further discloses about the “tree-based classification logic” (For example see col. 14, lines 2-5).

- In regard to claims 44-45, **Salim** discloses in Figs. 2-14 and in the respective portions of the specification about the *method and switching controller* (‘packet processing apparatus’; For example see Figs. 2, 12-14), *which comprises the programmable classification engine* (‘programmable discriminator’; see Figs. 2, 4; col. 4, lines 13-31, 45-47) *coupled to a plurality of programmable elements* (For example see col. 7, line 64 through col. 8, line 8; col. 10, line 48 through col. 11, line 7) *having a plurality of programs configured thereon* (For example see col. 10, line 48 through col. 11, line 7), *wherein the classification engine identifies for each packet a program* (‘selected bits or mask’; For example see col. 8, line 63 through col. 9, line 28; wherein the selected bits are used to select the appropriate function as disclosed in col. 10, line 63

Art Unit: 2661

through col. 11, line 7) *for each of the programmable elements, in response to which the elements execute the identified programs substantially in series* (For example see Fig. 7; col. 11, lines 51-54), *whereby the elements produces data for processing the packet* (For example see col. 6, line 56 through col. 7, line 2).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 3-4, 11-13, 16-17, 24-26, 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Salim, Jamal Hadi** (U.S.6,628,653; hereinafter refer as ‘**Salim**’) as applied to claims 1, 14 and 27 above, in view of **Tal et al.** (U.S.6,778,534; hereinafter refer as ‘**Tal**’).

- In regard to claims 3-4, 16-17 and 29, **Salim** discloses in Figs. 2-14 and in the respective portions of the specification about the method and packet switching controller, which comprise the programmable hardware discriminator for receiving and selecting bits from the incoming packets; according to the selected bits, the programmable hardware searching logic for accessing the information relating to how the packet are to be processed in the decision table and the packet handler for processing the packets according to the result of the access (“programmable elements execute a plurality of identified instruction sets to process the packet”

as discussed above in part 7 of this Office Action; wherein the programmable discriminator selects bits from the incoming packets, i.e. “*output generated by the programmable element*”, these are used by programmable table search logic to access the decision table, and the results, i.e. “*generating the application data*”, are used by the packet handler for processing packets as disclosed in col. 6, line 54 through col. 7, line 2; and wherein the processes are executed through the microcodes or sequencers, i.e. “*sequentially*”, as disclosed in Fig. 7; col. 2, lines 42-49; col. 11, lines 51-54), but fails to explicitly disclose the programmable elements are organized into “*pipelines*”. However, such implementation is known in the art.

For example, **Tal** discloses in Fig. 2 and in the respective portions of the specification about the method and high-speed system for processing and routing the packets, which comprise the memory block, the parsing subsystem, the searching subsystem, the resolution subsystem and the modification subsystem processed through the customized microcode machine (For example see Fig. 2; Abstract); wherein the network processor has the “*pipeline*” architecture and processes the instructions through the “*pipeline*” computing assembly lines for performing complex operations (For example see col. 5, lines 6-16; col. 6, lines 13-21).

Thus it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to implement the “*pipeline*” architecture and the “*pipeline*” computing assembly lines as taught by **Tal**, into the **Salim**’s sequential system and microcode, with the motivation being to optimize and improve the processing performance as disclosed in **Tal**: col. 1, lines 8-12.

- Regarding claims 11-13 and 24-26, in addition to features in base claims 1 and 14 (see rationales pertaining the rejection of base claims 1 and 14 discussed above), **Salim** does disclose about the method and programmable packet switching device for routing packets, wherein the table control function receives the information ("*classification information*") from the programmable discriminator ("*first engine*") and feeds into the decision table, which outputs the routing indicator ("*generating disposition decision for the packet*") for the control access (For example see col. 15, line 57 through col. 16, line 11); but fails to explicitly disclose about the "*disposition recommendations*" provided by the programmable elements. However, such implementation is known in the art.

For example, **Tal** further discloses about the searching stage ("*first engine*") receives search keys ("*classification information*") extracted by the parse stage, performs table look-ups and conveys the results ("*generating disposition decision for the packet*") to the resolution stage ("*programmable elements*") for the packet handling decision, which based on the policy enforcement and quality of service requirements "*disposition recommendations*" (For example see col. 5, line 56 through col. 6, line 9).

Thus it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to implement the packet handling decision, which based on the policy enforcement and quality of service requirements, e.g. "*disposition recommendations*", as taught by **Tal**, into the **Salim**'s programmable table search/maintenance logic, with the motivation being to improve the processing performance as disclosed in **Tal**: col. 1, lines 8-12.

Art Unit: 2661

10. Claims 8-9 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of **Salim, Jamal Hadi** (U.S.6,628,653; hereinafter refer as '**Salim**') in view of **Tal et al.** (U.S.6,778,534; hereinafter refer as '**Tal**') as applied to part 7 and 9 of this Office Action above, and further in view of **Gobuyan et al.** (U.S.5,917,821; hereinafter refer as '**Gobuyan**').

- In regard to claims 8-9 and 21-22, the combination of **Salim** and **Tal** discloses all the subject matter of the claimed invention as discussed above in parts 7 and 9 above of this Office Action about the method and packet switching controller, which comprise the programmable hardware discriminator for receiving and selecting bits from the incoming packets; according to the selected bits, the programmable hardware searching logic for accessing the information relating to how the packet are to be processed in the decision table and the packet handler for processing the packets according to the result of the access (wherein the programmable discriminator selects bits from the incoming packets, these are used by programmable table search logic to access the decision table, and the results are used by the packet handler for processing packets as disclosed in **Salim**: col. 6, line 54 through col. 7, line 2; and wherein the processes are executed through the microcodes or sequencers as disclosed in **Salim**: Fig. 7; col. 2, lines 42-49; col. 11, lines 51-54); and wherein the network processor has the "*pipeline*" architecture and processes the instructions through the "*pipeline*" computing assembly lines for performing complex operations (For example see **Tal**: col. 5, lines 6-16); but fails to explicitly disclose about the "*indicating to start/stop processing*" the packet. However, such implementation is known in the art.

For example, **Gobuyan** discloses about the method and system for the look-up engine to provide the fast packet-parsing in the packet-based digital communications networks (For example see Figs. 3, 5; Abstract) through the microcode instructions with Start/Stop instructions (“*indicating to start/stop processing*”; For example see col. 20, lines 23-31; col. 21, line 30; col. 22, lines 9-15, 43-48).

Thus it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to implement the “*start/stop process indicating*” as taught by **Gobuyan**, into the combination of **Salim** and **Tal**’s sequential system and microcode, with the motivation being to completely control over the search procedure with specific look-up function as disclosed in **Gobuyan**: col. 2, lines 26-31.

Allowable Subject Matter

11. Claims 10 and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Narad et al. (U.S.6,157,955), **Shirakawa et al.** (U.S.6,804,240) and **Brown et al.** ('An IRAM-Based Architecture for a Single-Chip ATM Switch',TR-07-97, Center for Research in Computing Technology, Harvard University, Cambridge, Massachusetts, pp 1-32) are all cited to

show devices and methods for improving packet processing system in the telecommunication architectures, which are considered pertinent to the claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tri H. Phan, whose telephone number is (571) 272-3074. The examiner can normally be reached on M-F (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau T. Nguyen can be reached on (571) 272-3126.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(571) 273-8300

Hand-delivered responses should be brought to Randolph Building, 401 Dulany Street, Alexandria, VA 22314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office, whose telephone number is (571) 272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

Art Unit: 2661

system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tri H. Phan
August 4, 2005



BRIAN NGUYEN
PRIMARY EXAMINER